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ABSTRACT

Research has identified several factors which may be stressful in early adolescence, including school change, puberty, and family changes. This study used a longitudinal cohort sequential design to examine whether stressful changes in early adolescence have impact beyond early adolescence. Of the 335 sixth graders initially sampled, 169 were available for follow-up as high school seniors. School achievement and self-image were measured; normative changes of timing and sequence of school change and puberty were examined; and non-normative family changes of divorce, remarriage, death, significant illness, and major job change of a parent were investigated. The hypothesis that school achievement would be more stable over time than would self-image was supported for girls, but not for boys. The two changes showing significant effects at follow-up with self-image were school transition and synchrony. Subjects experiencing two school transitions had significantly better self-images than did those with only one school transition. Those who went through puberty more than 6 months after school transition had higher self-images than did those who went through puberty at least 6 months before school transition. The findings suggest that early adolescence is a critical transitional period in development, not only for immediate effects but also for enduring consequences for school achievement and psychological adjustment. (NB)

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Responses to Developmental and Family Changes in Early Adolescence

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Presented in a symposium "Continuities and Discontinuities in Adolescents' Experience of Stress, Coping, and Academic Achievement: Longitudinal Perspectives," at the annual meeting of the American Educational Research Association, Washington, DC, April 20-24, 1987.

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Normative developmental changes and non-normative life events may both represent challenges to the individual, challenges that may be experienced as stimulating and growth-enhancing or as distressing, overwhelming, and inhibiting to further growth (Petersen & Ebata, in press). During the transition from childhood to adolescence, the phase of life called early adolescence, each individual experiences change in every aspect of development and in every important social context (Petersen, 1987). Although these changes are often successfully accommodated, we have found previously that specific simultaneous or deviantly-timed changes, particularly in combination with non-normative family changes, are related to poorer school achievement and poorer self-image (Petersen & Ebata, 1986, in press). This presentation describes new findings extending the earlier results longitudinally over the adolescent years. The primary question is whether stressful normative and non-normative changes in early adolescence have impact beyond the phase of early adolescence.

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Effects of Developmental Transitions

We hypothesize that developmental transitions, such as that in early adolescence, are important because they challenge individuals in such a way as to set them on a particular developmental course. This model for the effects of the developmental transition at early adolescence on subsequent developmental pathways is shown in Figure 1. The pathway or trajectory is affected by individual resources coming into the transition, by the nature of changes, and mediated by the peer and family supports available to the individual. Resources an individual brings to the transition include individual strengths and vulnerabilities (e.g., intellectual abilities and prior achievement, self-esteem) as well as prior social experiences and environmental resources (e.g., supportive family environment, sufficient material resources, healthy physical environment). Factors important to the nature of changes include the number of changes, their timing relative to social norms, and whether changes are sequential and simultaneous.

Insert Figure 1 here

It is possible that individuals recover from negative responses to the challenges of early adolescence and perhaps even thrive because of these challenges--a response that has led some to call the initial process an innoculation effect. We hypothesized, however, that responses in at least some areas are relatively enduring over the longer term. In particular, we expect that achievement will be more stable over the longer term than will self-image. Stated differently, we expect early

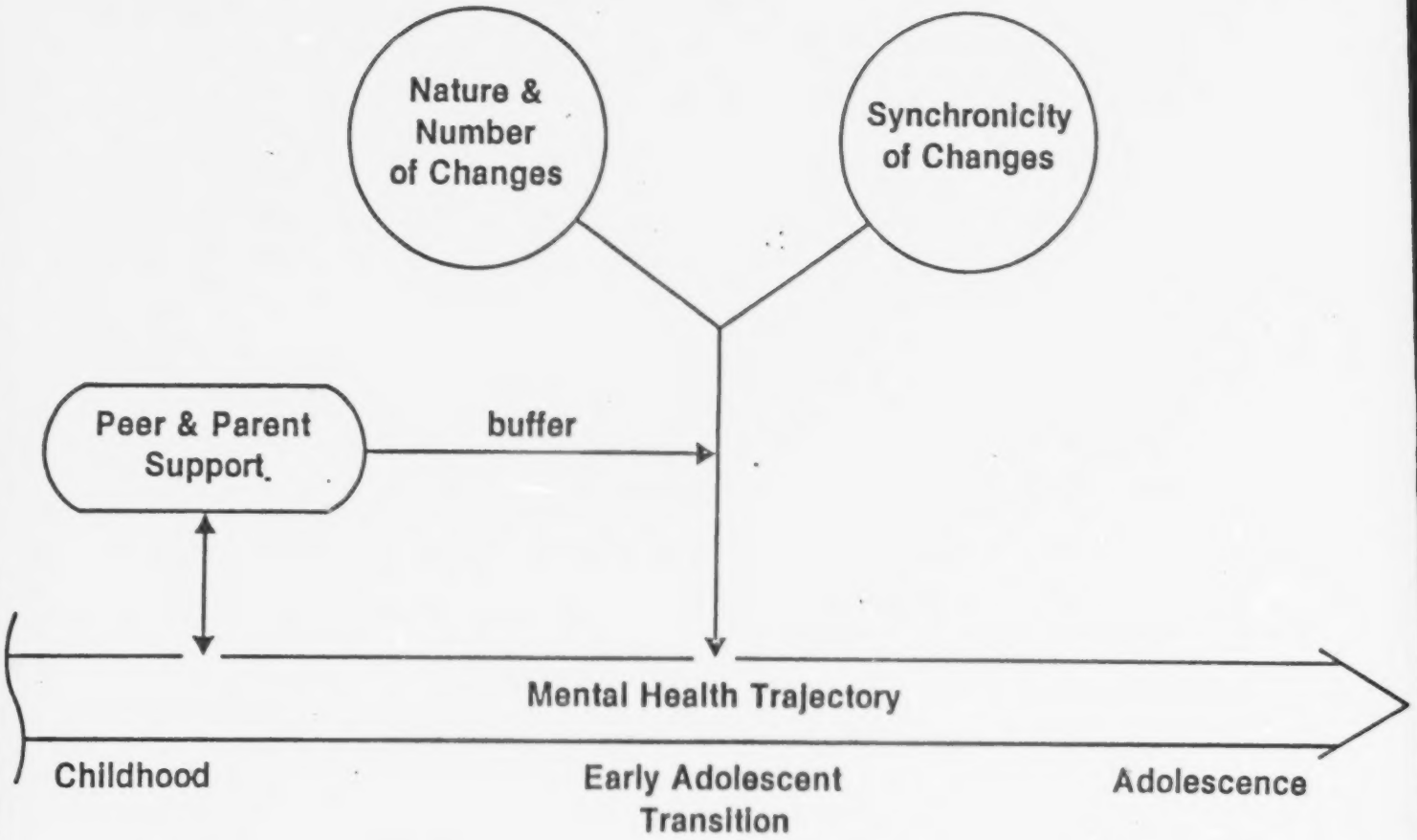


FIGURE 1

A MODEL OF DEVELOPMENTAL TRANSITIONS

adolescent developmental trajectories to be more predictive of school achievement than of self-image by the last year of high school.

In addition to examining the predictiveness of early adolescent developmental trajectories, we will also examine the longer term effects of stressful changes in early adolescence. Factors found previously to be stressful in early adolescence were: (1) an early change to a secondary school format, or two school changes in early adolescence, (2) early or late pubertal change, (3) simultaneous puberty and school change, and (4) non-normative family changes such as parental death or divorce.

Method

Design and Sample

This study (See Figure 2) utilized a longitudinal cohort-sequential design (Baltes, 1968; Schaie, 1965). Initially, 335 sixth graders were sampled randomly from two suburban school districts. These students are primarily middle to upper-middle class and predominantly white (see Richardson et al., 1984, and Schulenberg et al., 1984, for more information on the families and schools respectively). The sample available for follow-up in the last year of high school totalled 169 adolescents. Preliminary analyses have shown no differences in the early adolescent data between those who participated in the follow-up compared to those who did not.

Insert Figure 2 here

EARLY ADOLESCENCE STUDY

SAMPLE: 335 SIXTH GRADERS (AND PARENTS) FROM 2 SUBURBAN, MIDDLE TO UPPER-MIDDLE CLASS SCHOOL DISTRICTS

DESIGN: COHORT-SEQUENTIAL LONGITUDINAL
FOLLOWED GRADES 6-12
ASSESSED TWICE ANNUALLY IN GRADES 6-8, ONCE IN 12

FOCUS: MENTAL HEALTH FROM PERSPECTIVES OF SELF, FAMILY, SCHOOL, AND PEER GROUP

Measures

School achievement was indexed by year end grade point average based on course grades obtained from school records during the early adolescent years and from self-report in the last year of high school. Previous analyses in our data, as well as in other studies, suggest that adolescents are accurate in their self-reports of course grades (Crockett et al., 1986). Grades were reported for Mathematics, Science, Social Studies, Literature, and Language Arts. (Figure 3)

Insert Figure 3 here

Self-image was assessed with the Self-Image Questionnaire for Young Adolescents (SIQYA; Petersen et al., 1984). This questionnaire taps nine areas of personal and social functioning: Emotional Tone, Impulse Control, Body Image, Mastery and Coping, Psychopathology, and Superior Adjustment, as the six self-context scales; and Peer Relations, Family Relations, and Vocational/Educational Goals as the three social-context scales. For the present examination we focus only on the two scales that are the most direct measures of psychological adjustment: Emotional Tone and Psychopathology. In our previous analyses of effects at early adolescence, we included only Emotional Tone. (Figure 4). For the follow-up analyses, we added Psychopathology as well, for a more extreme indicator of psychological difficulties.

Insert Figure 4 here

COURSES USED FOR GPA

Mathematics
Science
Social Studies
Literature
Language Arts

EMOTIONAL TONE SCALE

7.	I feel nervous most of the time.	-
17.	I feel that I am not as good as most people I know.	-
22.	Most of the time I am happy.	+
27.	My feelings are easily hurt.	-
31.	I feel relaxed under normal circumstances.	+
32.	I feel empty emotionally most of the time.	-
40.	I am so very nervous.	-
50.	I feel so very lonely.	-
51.	I enjoy life.	+
61.	Very often I think that I am not at all the person I would like to be.	-
92.	I frequently feel sad.	-

11 items 3+/8-

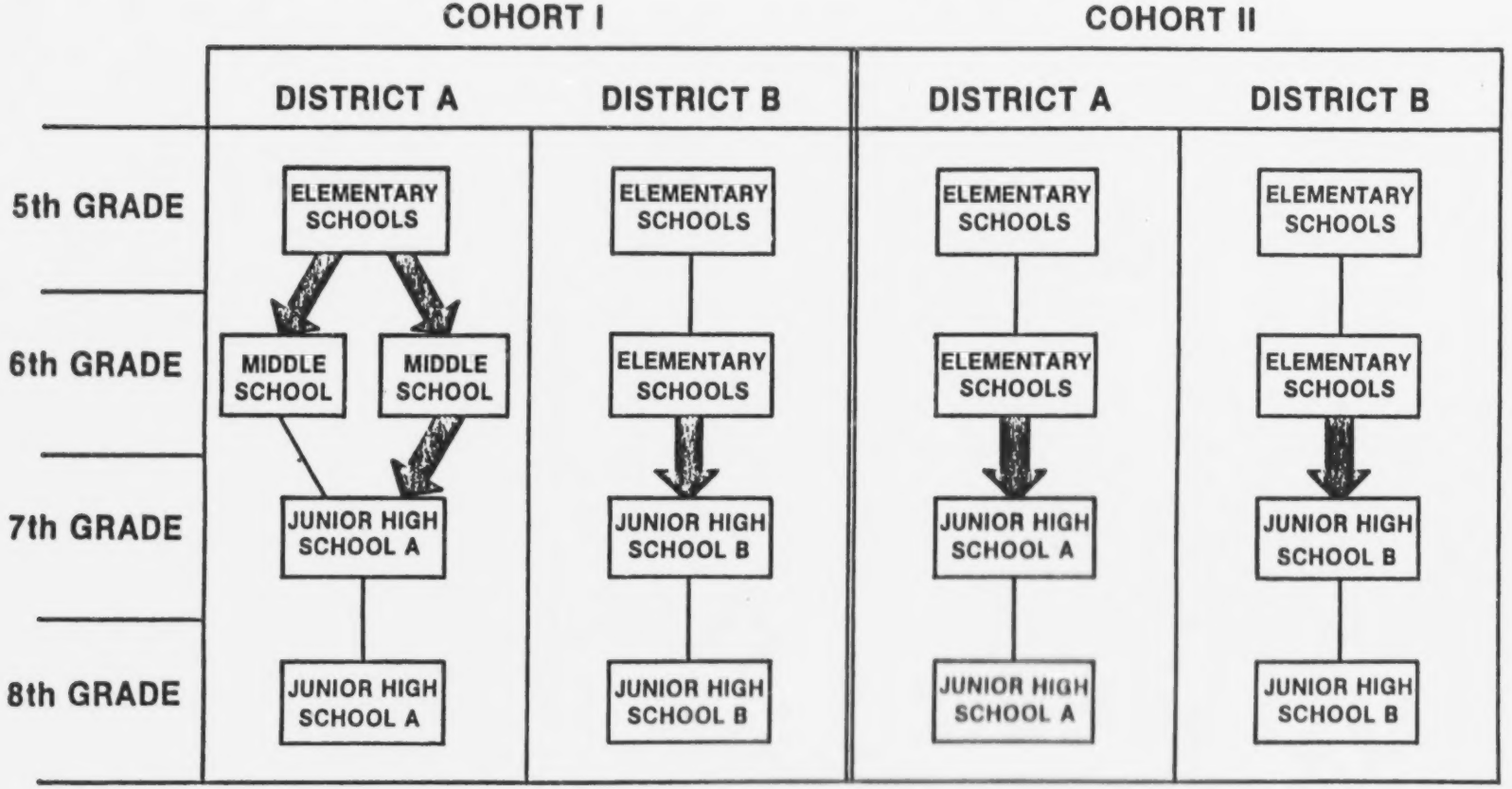
Normative Changes

The two normative changes examined here were the timing and sequence of school change and puberty. Although all youngsters changed school to a secondary school format during the study, we participated in a natural experiment--some students changed prior to sixth grade, some prior to seventh, and a third group at both times (Figure 5). A previous analysis of these data has revealed that both an earlier school transition and two transitions were related to less favorable outcomes than a single transition between sixth and seventh grades (Schulenberg et al., in preparation).

Insert Figure 5 about here

Earlier or later pubertal timing was examined previously in these data with some effects of each status. Earlier maturers achieved better grades overall (Figure 6) but had poor self-image on two scales (Figure 7) (Petersen & Crockett, 1985). Pubertal timing was indexed for both boys and girls by age at the peak rate of growth in height, with the within-sex distributions trichotomized into three categories: early, average (or on-time), and late. Age at peak height velocity usually falls in the middle of the four-year long pubertal process for boys, and somewhat earlier in the process for girls (Tanner, 1962).

Insert Figures 6 and 7 about here


COHORT I
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DISTRICT B
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6th GRADE
7th GRADE
8th GRADE
ELEMENTARY SCHOOLS
MIDDLE SCHOOL
MIDDLE SCHOOL
ELEMENTARY SCHOOLS
JUNIOR HIGH SCHOOL A
JUNIOR HIGH SCHOOL B
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JUNIOR HIGH SCHOOL B
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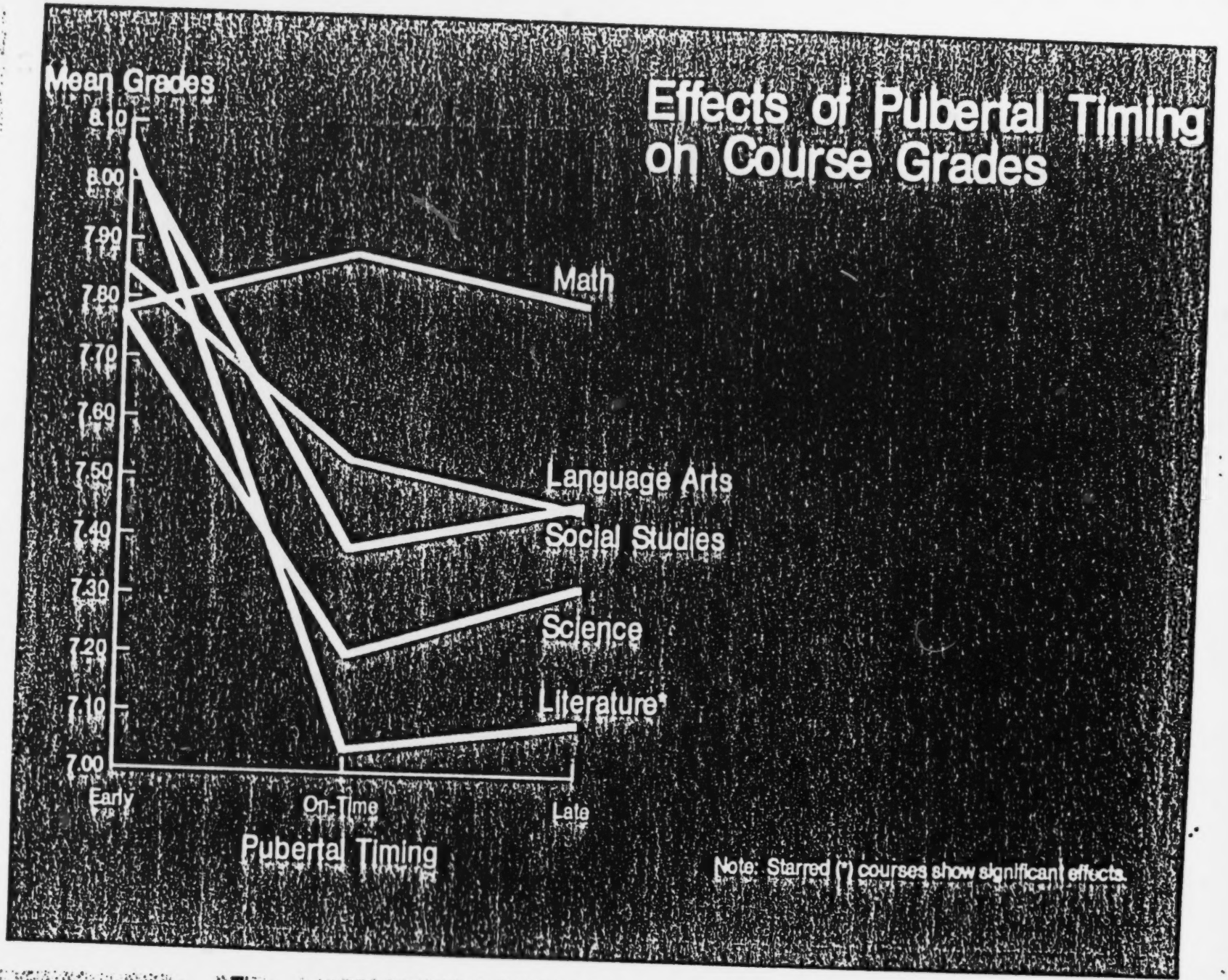
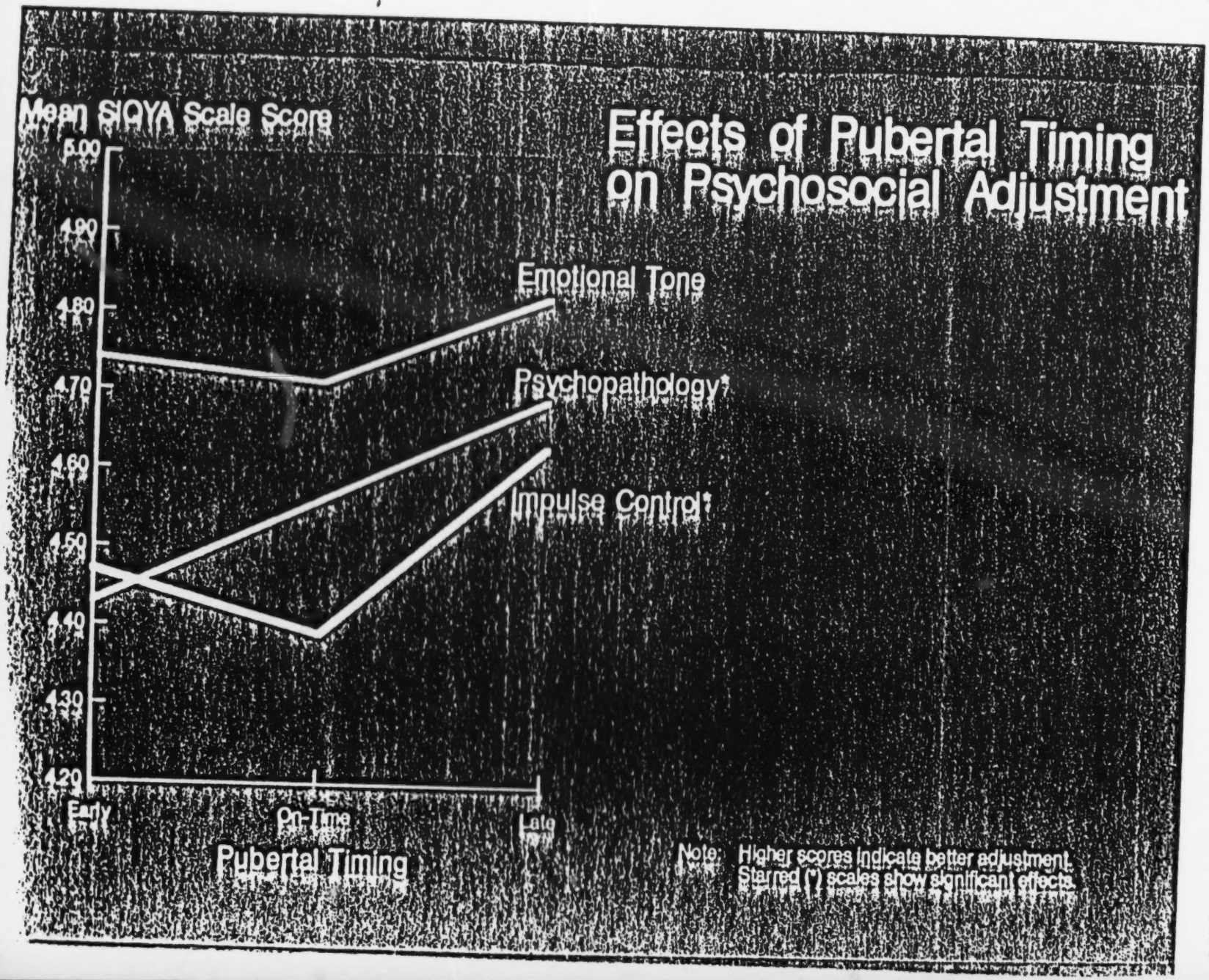

Effects of Pubertal Timing on Course Grades
Mean Grades
8.10
8.00
7.90
7.80
7.70
7.60
7.50
7.40
7.30
7.20
7.10
7.00
Math
Language Arts
Social Studies
Science
Literature*
Early
On-Time
Late
Pubertal Timing
Note: Starred (*) courses show significant effects.


Effects of Pubertal Timing on Psychosocial Adjustment
Mean SIQYA Scale Score
5.00
4.90
4.80
4.70
4.60
4.50
4.40
4.30
4.20
Emotional Tone
Psychopathology*
Impulse Control*
Early
On-Time
Late
Pubertal Timing
Note: Higher scores indicate better adjustment.
Starred (*) scales show significant effects.

The relative sequencing of these two normative changes was indexed by a third variable identifying the extent of synchrony between them. School change and pubertal change were considered synchronous if the age at the peak height velocity was attained within six months of the entry into secondary (junior high or middle) school. Alternatively, puberty (as indexed by age at peak height velocity) could precede or follow school change by more than six months. The extent of synchrony of these two variables is show in Table 1. The table reveals clear bias by gender, with puberty most likely to be synchronous with school change for girls, and to follow it for boys.

Insert Table 1 about here

Non-Normative Family Change

Although non-normative changes may occur in several contexts, we focused here on the family as likely to be most salient and influential on adolescent outcomes. Interview data from the adolescents and their parents were coded for the presence of any of five changes occurring in the household from sixth through eighth grades: divorce, remarriage, death, significant illness, and major job change of parent (Table 2). Although the numbers of these changes was unrelated to gender or any other of the exploratory variables, girls were three times as likely as boys to experience parental divorce.

Insert Table 2 about here

Table 1

Synchrony of Pubertal Change[1] and School Transition for Boys and Girls

	Boys (n=114)	Girls (n=140)
PHV > 6 months before transition	1.1%	36.4%
PHV within 6 months of transition	11.6%	43.0%
PHV > 6 months after transition	87.4%	20.7%

[1]Indexed by age at peak height velocity (PHV).

Table 2

Frequency of Non-Normative Household Changes

Experienced During Grades 6 Through 8

	Boys	Girls
Divorce	3.5%	10.0%
Remarriage	1.8%	2.9%
Death	2.7%	0.7%
Illness	9.7%	7.1%
Job Change	12.4%	19.3%
Number of Changes	Boys	Girls
0	72.6	65.5%
1	24.8%	30.0%
2	2.7%	5.0%

Individual Characteristics

Several individual characteristics are likely to have influenced prior development (and therefore current status). Gender is a factor of great interest to us as one most likely to play a role in developmental patterns and in contextual characteristics. For the follow-up analyses, we examined eighth grade status on the outcome variables as predictors and covariates.

Eighth Grade Analyses

We (Petersen & Ebata, 1986) previously tested the effects of these normative and non-normative changes in early adolescence on 8th grade school achievement and psychological adjustment. (Table 3) There were significant effects of normative changes, accounting for 4 to 5% of the variance. (Table 4) Family changes alone showed no effects but did amplify effects of school transition and the synchrony of pubertal timing and school transition.

Results of the Follow-up Analyses

Stability of Self-Image and Achievement

Our first hypothesis was that school achievement would be more stable over time than would self-image. The longitudinal correlations from 6th to 12th grade for school achievement was .37 for boys and .45 for girls. The correlation over the same period for Emotional Tone was .45 for boys and .10 for girls. Therefore, achievement and self-image are equally stable for boys; for girls, however, achievement is significantly more stable than self-image in terms of Emotional Tone. Analyses of other measures suggest that psychological adjustment was much less stable over adolescence for girls than for boys. Thus, our hypothesis appears to be true only for girls.

Table 3

Hypotheses For Negative Effects of Early Adolescent Changes On Grades and Emotional Tone In Eighth Grade

Normative Changes

* deviant pubertal timing
* double or early school transition
* synchronous school and pubertal change

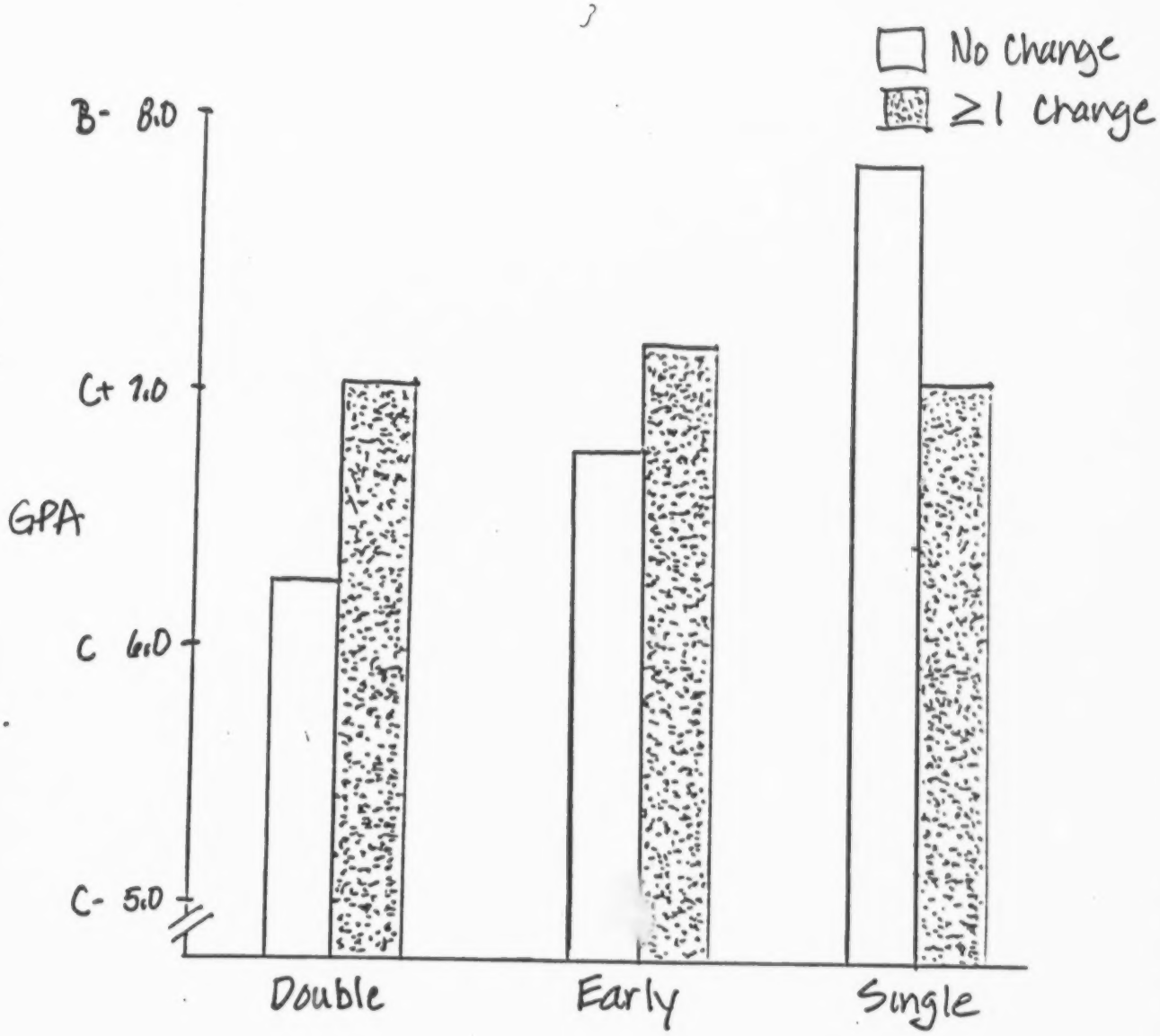
Non-Normative Changes

* family changes

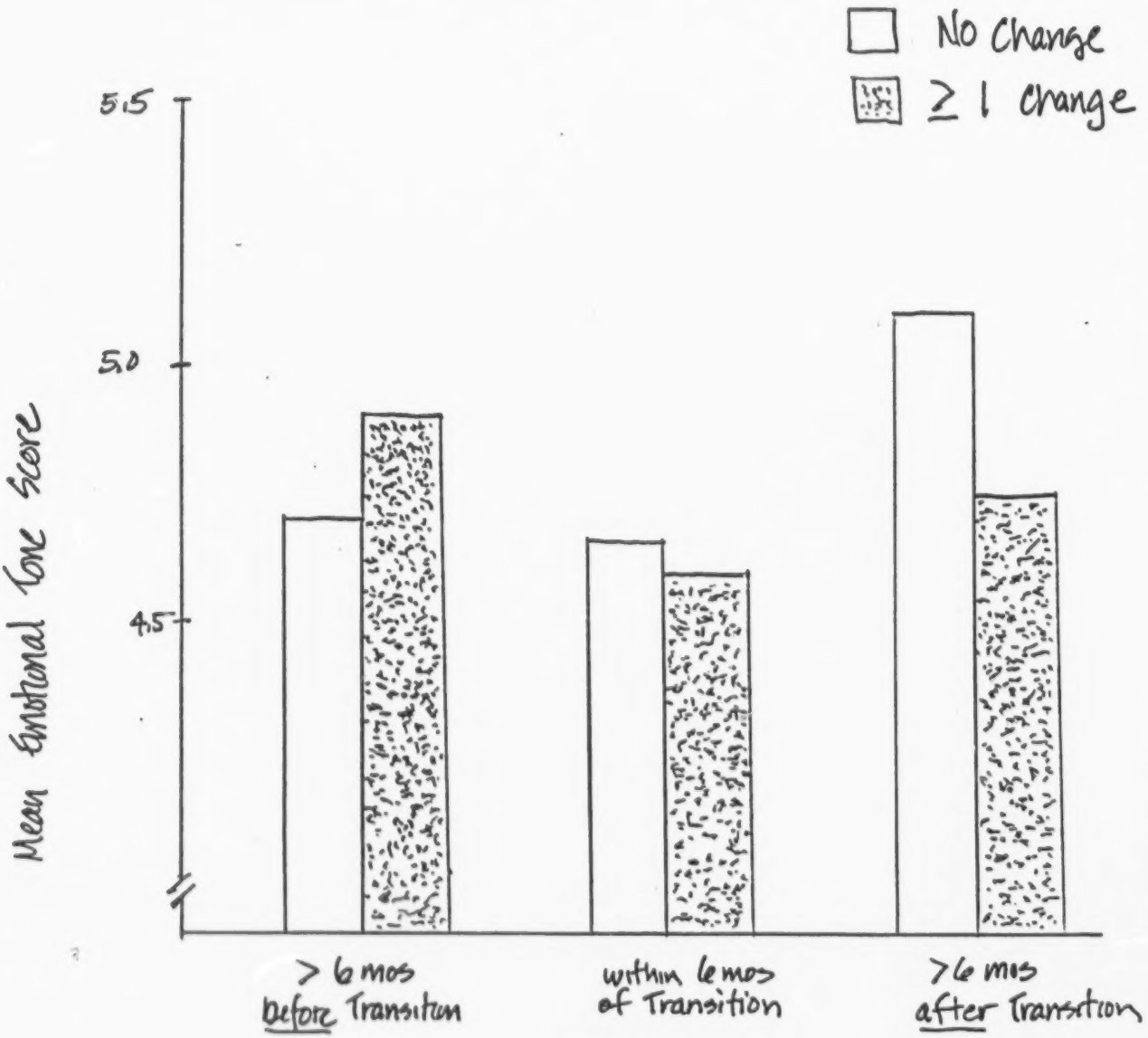
Table 4

Results Of Effect Of Early Adolescent Changes On Grades and Emotional Tone At Eighth Grade

	Normative Changes
Yes:	5% of variance in GPA8
	4% of variance in ET8
	Non-Normative Changes
No:	no effects of family changes alone



Effects of School Transitions and Family Changes on 8th grade GPA



Effects of Synchrony of Puberty and School Transitions and Family Changes on 8th grade Emotional Tone

Effects of Early Adolescent Changes

As just noted, the effects on 8th grade outcomes of normative changes in early adolescence were significant but small in magnitude, accounting for just 4 to 5 percent of the variance. Interestingly, the predictiveness of the early adolescent changes was higher four years later, at follow-up. As can be seen in Table 5, 5-6% of the variance in school achievement and 11-14% of the variance in self-image was predicted independently by each change at 12th grade. Since the model included sex (in order to have sufficient sample size in the analyses), this variable is surely contributing some variance to the outcome but sex was significant only with the self-image scales. Boys reported better emotional tone and less psychopathology. There were no interaction effects.

As in the 8th grade, family changes did not significantly predict 12th grade outcomes when considered alone. Unlike the earlier results, however, there were no additive or interactive effects of family change when considered with normative change in early adolescence.

The two changes showing significant effects at follow-up with both self-image constructs at 12th grade were school transition and synchrony. (see Table 6) Those experiencing two school transitions had significantly better self-image than those who changed school once from the 6th to 7th grade. Those who went through puberty more than six months after the school transition had higher self-image than those who went through puberty at least six months before the school transition.

Discussion

We have extended to the end of high school, our previous results showing significant effects of changes in early adolescence on school

Table 5

Percentage Variance Accounted for by

Early Adolescent Changes on 12th Grade Outcomes

	Model R^2		
Changes	GPA	Emotional Tone	Psycho-pathology
School Transition	5%	11%*#	14%*#
Pubertal Timing	6%	11%*	13%*
Synchrony of Pubertal and School Transition	6%	14%*	14%*#
Family Change	5%*	9%*	10%*

Note: Model is Sex x Change x Interaction; # indicates significant change effects and * significant sex effects; there were no significant interactions.

Table 6

Significant Early Adolescent Change Effects

on Twelfth Grade Outcomes

Model: School Transition (ST) x Sex x Interaction

12th Grade Outcomes	ST	Sex	Int	Results Change with 8th Covariate ?
Grade Point Average	ns	ns	ns	no
Emotional Tone	*	*	ns	no
Psychopathology	*	*	ns	no

Model: Pubertal Timing (PT) x Sex x Interaction

12th Grade Outcomes	PT	Sex	Int	Results Change with 8th Covariate ?
Grade Point Average	ns	ns	ns	no
Emotional Tone	ns	*	ns	no
Psychopathology	ns	*	ns	no

Model: Synchrony of ST/PT x Sex x Interaction

12th Grade Outcomes	Synch	Sex	Int	Results Change with 8th Covariate ?
Grade Point Average	ns	ns	ns	no
Emotional Tone	*	ns	ns	yes: Sex*
Psychopathology	*	*	ns	yes: Synch ns

Table 6 (cont.)

Model: Family Changes x Sex x Interaction

12th Grade Outcomes	Fam	Sex	Int	Results Change with 8th Covariate ?
Grade Point Average	ns	*	ns	no
Emotional Tone	ns	*	ns	no
Psychopathology	ns	*	ns	no

Note: n's range from 104 (self-image scales) to 119 (GPA)

achievement and psychological adjustment. The effects of the timing of school transitions and the synchrony of school transition and pubertal change, however, are somewhat different from effects seen in early adolescence, particularly on psychological adjustment. Finding better self-image, rather than worse, among those who changed schools twice was surprising. Several interpretations are possible. These young adolescents may have actually improved in self-image after dealing with the challenge of changing schools twice. Alternatively, they may have changed their baseline in reporting self-image; after experiencing a low, they now feel relatively higher. Finally, although we did not generally find bias in our follow-up sample, is possible that we have selective bias in this group of youngsters. These possibilities will be pursued further.

As before, the most variance was contributed by prior status (i.e., at 8th grade) on the outcome variables at 12th grade. In only one case, however, did an effect become non-significant when 8th grade status was controlled; the effect on 12th grade psychopathology of synchrony of school transition and pubertal timing became non-significant when 8th grade psychopathology was controlled.

These results suggest that changes experienced in early adolescence have enduring effects on subsequent development. The effects were most striking with psychological adjustment but also modest (in percent variance though not statistically significant) with school achievement. Since the magnitude of the effect is greater than that found with 8th grade outcomes, the lack of statistical significance is a power issue due to decreased sample size rather than any diminution of effect.

Among our other inferences from the results, we conclude that the size and direction of effects may vary depending on when an outcome is measured. The variety of factors operating between measurements is practically infinite; anytime sampling can obtain only a snapshot in the life process. Longitudinal research can begin to unravel the process by which factors affect outcomes. Some factors that initially produce negative effects may enhance functioning over the longer term. Finally, the examination of individual differences in characteristics brought to a challenging situation as well the nature of coping responses available to the individual is crucial to the study of developmental change.

We conclude therefore that early adolescence is a critical transitional period in development, not only for immediate effects but also for enduring consequences for school achievement and psychological adjustment. These empirical results support earlier hypotheses and highlight the importance of attending to the needs of young adolescents. They also suggest that interventions at this time, to ameliorate any enduring negative effects, would be highly important.

References

Crockett, L. J., Schulenberg, J. E., & Petersen, A. C. (1987). Congruence between objective and self-report data in a sample of young adolescents. Manuscript submitted for publication.

Petersen, A. C. (1987). The nature of biological-psychosocial interactions: The sample case of early adolescence. In R. M. Lerner & T. T. Foch (Eds.), Biological-psychological interactions in early adolescence: A life-span perspective. Hillsdale, NJ: Erlbaum.

Petersen, A. C., & Crockett, L. (1985). Pubertal timing and grade effects on adjustment. Journal of youth and adolescence, 14, 191-206.

Petersen, A. C., & Ebata, A. T. (In press). Developmental transitions and adolescent problem behavior: Implications for prevention and invention. In K. Hurrelmann (Ed.), Social prevention and intervention. New York: de Gruyter.

Petersen, A. C., & Ebata, A. T. (1986, March). Effects of normative and non-normative changes on early adolescent development. In R. G. Simmons & A. C. Petersen (Chairs), Adolescent adjustment to the cumulation and synchronization of life transitions. Symposium conducted at the biennial meeting of the Society for Research on Adolescence, Madison, WI.

Petersen, A. C., Schulenberg, J. E., Abramowitz, R. H., Offer, D., & Jarcho, H. D. (1984). A Self-Image Questionnaire for Young Adolescents (SIQYA): Reliability of validity studies. Journal of Youth and Adolescence, 13, 93-111.

Richardson, R. A., Galambos, N. L., Schulenberg, J. E., & Petersen, A. C. (1984). Young adolescents' perceptions of the family environment. Journal of Early Adolescence, 4, 131-154.

Schulenberg, J. E., Asp, C. E., & Petersen, A. C. (1984). School from the young adolescent's perspective: A descriptive report. Journal of Early Adolescence, 4, 107-130.

Schulenberg, J. E., Crockett, L., Abramowitz, R. A., & Petersen, A. C. (In preparation). The effects of school transitions on early adolescent functioning.

Tanner, J. M. (1962). Growth at adolescence. Oxford: Blackwell Scientific Publications.

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[1]Indexed by age at peak height velocity (PHV).

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Emotional Tone	*	*	ns	no
Psychopathology	*	*	ns	no

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12th Grade Outcomes	PT	Sex	Int	Results Change with 8th Covariate ?
Grade Point Average	ns	ns	ns	no
Emotional Tone	ns	*	ns	no
Psychopathology	ns	*	ns	no

Model: Synchrony of ST/PT x Sex x Interaction

12th Grade Outcomes	Synch	Sex	Int	Results Change with 8th Covariate ?
Grade Point Average	ns	ns	ns	no
Emotional Tone	*	ns	ns	yes: Sex*
Psychopathology	*	*	ns	yes: Synch ns

Table 6 (cont.)

Model: Family Changes x Sex x Interaction

12th Grade Outcomes	Fam	Sex	Int	Results Change with 8th Covariate ?
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Emotional Tone	ns	*	ns	no
Psychopathology	ns	*	ns	no

Note: n's range from 104 (self-image scales) to 119 (GPA)